Measuring the Effects of Mandated Disclosure

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I. INTRODUCTION

A recurring debate among corporate and securities law scholars is whether mandated disclosure, the heart of U.S. securities regulation, is necessary. One set of commentators contends that market forces will generally ensure that the optimal level of disclosure occurs without any regulatory intervention.[1] Other scholars have defended mandated disclosure as both necessary and beneficial focusing on informational externalities associated with firm disclosures.[2] What is needed at this point in the debate is more empirical research on the actual effects of mandated disclosure.

The "classic" econometric studies of mandated disclosure, heavily relied upon and debated by legal academics in their analysis of mandated disclosure, consist largely of three studies: George Stigler's 1964 study; George Benston's 1973 study; and Carol Simon's 1989 study.[3] All three studies analyzed either the effect the Securities Act of 1933 (Stigler and Simon) or the Exchange Act of 1934 (Benston)—collectively known as the Securities Acts—had on stock prices.

Stigler examined the stock price performance of new stock issues before and after the Securities Act of 1933.[4] Benston examined the impact of the Exchange Act of 1934 on a sample of 466 NYSE-listed firms which he divided into two groups: 290 firms that were already disclosing sales information before passage of the Exchange Act of 1934 mandated such disclosures (the "disclosure group") and a group of 176 firms that were not (the "non-disclosure group").[5] Simon examined, as Stigler did, the performance of new issues before and after the Securities Act of 1933.[6] She divided her sample into seasoned

1. *See* Roberta Romano, *Empowering Investors: A Market Approach to Securities Regulation*, 107 YALE L.J. 2359 (1998); Roberta Romano, *The Need for Competition in International Securities Regulation*, 2 THEORETICAL INQUIRIES 387 (2001).

2. *See, e.g.*, Merritt Fox, *Retaining Mandatory Disclosure: Why Issuer Choice is not Investor Empowerment*, 85 VA. L. REV. 1335 (1999).

3. There are also several important recent studies on the effects of mandatory disclosure in cross-country studies. *See e.g.*, Rafael LaPorta et al., What Works in Securities Regulation?, (2004) (working paper), *available at* http://post.economics.harvard.edu/faculty/shleifer/papers/securities_0907.pdf (last visited Dec. 21, 2004).

4. George Stigler, *Public Regulation of the Securities Markets*, 37 J. BUS. 117 (1964).

5. George Benston, *Required Disclosure and the Stock Market: An Evaluation of the Securities Exchange Act of 1934*, 63 AM. ECON. REV. 132 (1973).

6. Carol Simon, *The Effect of the 1933 Securities Act on Investor Information and the Performance of New Issues*, 79 AM. ECON. REV. 295 (1989).

NYSE companies, unseasoned NYSE companies, seasoned non-NYSE companies, and unseasoned non-NYSE companies.

Finally, a recent empirical study by myself, building on this literature, looked at the effects of the 1964 imposition of mandated disclosure on the over-the-counter market, the only other fundamental change in the U.S. in the scope of mandated disclosure besides the original Securities Acts.[7]

This piece will argue that Stigler, Benston, and Simon's failure to convincingly arbitrate the debate over mandated disclosure is largely attributable to two shortcomings: (1) a lack of convincing theory justifying the particular measures of stock price performance employed in these studies; and (2) the inability to control for changing market conditions when comparing pre- and post-mandated disclosure periods.

Part II will discuss the main potential benefit of mandated disclosure in the United States emphasized by advocates of mandated disclosure: greater stock price accuracy. Part III will then discuss the lack of theory connecting stock price accuracy to the various aspects of stock market performance measured in the empirical literature. After this discussion, Part IV will conclude by addressing the second main shortcoming of the empirical literature: the lack of adequate controls to distinguish time-series effects from the effects of mandated disclosure laws.

II. THE BENEFITS OF STOCK PRICE ACCURACY

As a conceptual matter, an important test for whether mandated disclosure "works" is whether the informational content of stock prices, post-mandated disclosure, is greater than it would otherwise have been. The more information is impounded into the price of a stock, the more the price of a stock correctly anticipates the future prospects of the company. The concept of stock price accuracy is well accepted and commonly employed in the accounting and finance literature.[8] Following Merritt Fox, I will refer to the level of informational content of stock prices as "stock price accuracy."

Improved stock price accuracy is potentially valuable for at least two separate reasons. First, to the extent that capital is allocated based on stock prices, the more accurate stock prices are, the better that allocation will be. "Better" in this context means that capital will be more likely to be allocated to

7. Allen Ferrell, Mandated Disclosure and Stock Returns: Evidence from the Over-the-Counter Market (December 2003) (Harvard Law and Economics Discussion Paper No. 453), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=500123. *See also* Michael Greenstone et al., The Effects of Equity Market Regulation: Evidence from the Securities Acts Amendments of 1964 (2004) (MIT Department of Economics Working Paper No. 04-33), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=597142 (last visited Dec. 21, 2004).

8. *See generally* Merritt B. Fox, *Securities Disclosure in a Globalizing Market: Who Should Regulate Whom*, 95 MICH. L. REV. 2498, 2540 (1997).

the highest-valued user of that capital. Second, to the extent that corporate governance decisions depend on the accuracy of stock prices, the more accurate stock prices are, the better corporate governance will be. Economists often focus on the first reason while legal academics commonly focus on the second.

A. Capital Allocation and Stock Prices

Measuring the extent to which investment decisions are driven by stock prices has proven very difficult. Any given investment decision might be based on stock prices or, alternatively, could be based on the underlying business fundamentals. Separating the two is not easy if stock prices actually reflect, as is likely the case, business fundamentals. This is a pressing problem, as stock prices are traditionally thought of as reflecting the marginal product of capital, a concept that captures the business fundamentals that should ideally be driving investment decisions.[9] A central question, then, is whether fundamentals drive investment decisions solely, or, alternatively, whether stock prices play an independent role in affecting investment.

Different studies have applied various techniques in trying to disentangle the two, arriving at different conclusions on the extent to which stock prices factor into investment decisions. Some researchers have found that stock prices play only a limited role in investment decisions.[10] Other researchers, in contrast, have found that stock prices can play an important role in the allocation of capital.[11]

Recent empirical research, however, has been supportive of the view that stock prices can matter for investment decisions.[12] An interesting recent study by Durnev, Morck, and Yeung investigated the relationship between the stock price accuracy of an industry's stock and the allocation of capital in that industry.[13] The study used firm-specific stock price variation as a proxy for stock price accuracy. Firm-specific stock price variation is the fraction of stock price variation that is left "unexplained" by some baseline asset-pricing model, such as the CAPM. Such variations cannot be attributed to broader fluctuations in the markets, and are, hence, firm specific. Using this proxy for stock price accuracy they found in this study that capital was allocated with greater precision in industries with more accurate stock prices.

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9. *See* S. Fischer & R.C. Merton, *Macroeconomics and the Role of the Stock Market*, 21 CARNEGIE ROCHESTER SERIES ON PUBLIC POLICY 57 (1984).

10. *See* O. Blanchard et al., *The Stock Market, Profit, and Investment*, 108 Q. J. ECON. 115 (1993).

11. *See* R. Barro, *The Stock Market and Investment*, 3 REV. FIN. STUD. 115 (1990).

12. *See generally* Jeremy Stein, Agency, Information and Corporate Investment, (2001) (working paper) (surveying empirical evidence).

13. *See* Art Durnev et al., *Value Enhancing Capital Budgeting and Firm Specific Stock Return Variation*, 59 J. FIN. 65 (2004).

B. Corporate Governance

Researchers have also inquired into the second potential effect of improved stock price accuracy: improved corporate governance. One important corporate governance mechanism is mergers and acquisitions, which can serve as an important disciplinary device.[14] Shleifer and Vishny argue that the cost of equity—which is derived from stock prices—is an important variable capable of helping to explain the incidence of merger and acquisition activity across industries and over time.[15] Likewise, the effectiveness of executive compensation, another important corporate governance mechanism, depends on stock prices accurately reflecting an individual firm's success.

In short, more accurate stock prices can serve the dual function of ensuring better investment decisions and improving corporate governance.

III. THE LACK OF THEORY

Given the potential importance of stock price accuracy for the allocation of capital and corporate governance, there is a real need for proxies for stock price accuracy. Unfortunately, the job of empirical researchers has been frustrated, to a certain extent, by a lack of theory that could help identify good proxies. What has been measured to date are stock returns,[16] stock volatility,[17] the cross-sectional variance of stock returns,[18] and, in two recent studies, stock return synchronicity measures.[19] A solid theoretical connection between these proxies and stock price accuracy would be quite useful.

This Part will examine the possible theoretical bases for the use of these different measures.

A. Stock Returns

All three of the classic econometric studies, as well as my own study of the effect of the Securities Act Amendments of 1964, looked at changes in stock returns pre- and post-mandated disclosure. Each had different assumptions about how mandated disclosure would manifest itself in stock returns. Stigler reasoned that the purpose of mandated disclosure is to improve shareholder welfare and, therefore, a natural place to look is the relationship between

14. *See e.g.* Frank Easterbrook and Daniel Fischel, *The Proper Role of a Target's Management in Responding to a Tender Offer*, 94 HARV. L. REV. 1161 (1981).

15. A. Shleifer and R. Vishny, *Stock Market Driven Acquisitions*, 70 J. FIN. ECON. 295 (2003).

16. *See, e.g.*, Ferrell, *supra* note 7.

17. *See, e.g.*, George Benston, *Required Disclosure and the Stock Market: An Evaluation of the Securities Exchange Act of 1934*, 63 AM. ECON. REV. 132 (1973).

18. *See, e.g.*, Carol Simon, *The Effect of the 1933 Securities Act on Investor Information and the Performance of New Issues*, 79 AM. ECON. REV. 295 (1989).

19. *See* Ferrell, *supra* note 7; Merritt Fox et al., *Law, Share Price Accuracy and Economic Performance: The New Evidence*, MICH. L. REV. (forthcoming).

mandated disclosure and stock returns. Benston reasoned that if managers were adequately disclosing pre-mandated disclosure, then mandated disclosure might be viewed by investors as imposing a net cost on the firm, which would manifest itself in lower stock returns. Given the consistent use of stock returns in the literature, I also measured stock returns pre- and post-mandated disclosure.[20]

All four studies (including Carol Simon's study that looked at the dispersion of stock returns) controlled for market fluctuations in order to determine whether stock returns were affected by the imposition of mandated disclosure. Stigler compared the average returns on new stock issues floated between 1925 and 1929 with those issued in 1949-1953. He deflated the ratio of the value of the new-issues portfolio by the value of a broad market index to control for market fluctuations. Benston used a market model that enabled him to also control for fluctuations in the overall market. Simon and I used a more extensive specification of the return generating process enabling them to control for overall market fluctuations, time effects, and industry effects. In addition, I included additional controls for book-to-market effects and firm size effects. Both Simon and I also used an alternative specification of abnormal returns—net-of-market returns (individual stock return minus the market return)—as a robustness check.

Stigler and Benston found no differences in stock returns pre- and post-mandated disclosure after employing their various controls. Simon found that the stock returns of NYSE-traded issuers, unseasoned as well as seasoned, was statistically identical pre- and post-mandated disclosure. However, I tested both the change in average abnormal as well as the median abnormal return pre- and post-mandated disclosure and found evidence consistent with an increase in stock prices resulting from mandated disclosure.[21]

These findings raise two questions. First, are changes in abnormal returns a good test for whether or not mandated disclosure is beneficial? Second, are changes in the abnormal returns pre- and post-mandated disclosure a good proxy for stock price accuracy?

Asset pricing theory implies that the expected return on an asset is the risk-free rate of return plus a premium based on the risk inherent in holding that asset. In order for changes in stock returns to serve as a proxy for changes in stock price accuracy, one would need to show that stock price accuracy has a meaningful effect on the risk-free rate of return or the premium associated with holding undiversifiable risk. This effect is neither straightforward nor obvious. Further explanation of the mechanisms by which mandated disclosure affect stock prices would therefore be useful.

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20. Ferrell, *supra* note 7.
21. *Id.*

It is possible, of course, that in the immediate aftermath of mandated disclosure companies would experience stock price changes as new information came to light. However, this does not mean that the average stock price reaction would be positive or negative. The value of some firms might be revised downward after negative information is released while other firms might experience upward revisions after investors realize there is no unreleased, or concealed, negative information.

Such reasoning suggests that one possible test for determining whether mandated disclosure is resulting in new information being released—and hence improving stock price accuracy—is the change in the dispersion of abnormal returns in the immediate aftermath of mandated disclosure. There are, however, several other candidates for explaining how stock returns are affected by the release of new information required by a mandated disclosure regime.

One possibility developed in the accounting literature is the potential that there is "estimation" risk when an investor purchases a stock for which there is inadequate information.[22] Because the CAPM model assumes a security's payoff distribution is known by investors, this estimation risk is not reflected in the traditional CAPM model.

An open question concerning whether estimation risk is significant or not has centered on whether estimation risk is diversifiable or not. This remains a point of debate in the literature, with some commentators arguing that estimation risk should be diversifiable given the breadth of modern securities markets.[23] If estimation risk is diversifiable then it should have no affect on stock returns. If this is so, then improvements in stock price accuracy would not affect stock returns or prices through reducing estimation risk.

A second possibility, explored by Amihud and Mendelson among others, is that more information leads to a reduction in bid-ask spreads.[24] The adverse selection component of the bid-ask spread, a well-established component of the bid-ask spread, should fall as more information becomes publicly known about a stock.[25] Reduced bid-ask spreads, in turn, should result in *lower* stock returns as the transaction costs facing investors are reduced. Of course, at the time the bid-ask spreads are reduced, stock prices should increase capitalizing the savings to investors resulting from smaller bid-asks spreads in the future.

B. Stock Volatility Over Time

Stigler, Benston, and Ferrell also measured the effect of mandated

22. *See generally* Peter Clarkson et al., *On the Diversification, Observability, and Measurement of Estimation Risk*, 31 J. FIN. & QUANTITATIVE ANALYSIS 69 (1996).

23. *Id.*

24. *See* Yakov Amihud & Haim Mendelson, *Asset Pricing and the Bid-Ask Spread*, 17 J. FIN. ECON. 223 (1986).

25. *See generally* MAUREEN O'HARA, MARKET MICROSTRUCTURE THEORY (1995).

disclosure on the volatility of abnormal returns of stocks over time. Stigler found that stock return volatility was significantly lower in the period following the passage of the Securities Act of 1933. Benston measured the effect of mandated disclosure on the volatility of abnormal returns—those returns unexplained by the market model. He found that the variance of securities prices declined substantially after the imposition of mandated disclosure. At the same time, he found no statistically significant changes in the variance of abnormal returns of stocks in his disclosing and non-disclosing group that can be associated with passage of the Exchange Act of 1934.

Many commentators have argued that the "most logical conclusion to draw from this evidence is that [stock price accuracy] was enhanced and that investors thereby benefited."[26] This argument ignores, however, the fact that Benston found no statistically significant differences between the reaction of the disclosure group to mandated disclosure and the non-disclosure group. Benston reported that the change in variance was "almost the same for those corporations that were and were not affected by the Act."[27]

On the other hand, I found that the volatility of abnormal stock returns in the over-the-counter ("OTC") market experienced a substantial decline in the post-mandated disclosure period.[28] The control group, exchange-listed companies, actually experienced an increase in volatility in the post-mandated disclosure period. As a result, the volatility of listed and OTC stock returns were virtually identical in the period following the imposition of mandated disclosure on OTC firms. In contrast, in the pre-mandated disclosure period OTC volatility was significantly higher than that of the listed market.

However, the findings on volatility, while suggestive, beg the question: is decreased variance necessarily indicative of improved stock price accuracy? We still need a convincing theoretical framework connecting the two in order to interpret the empirical findings. Consider the following four possibilities and their differing predictions concerning the relationship between volatility and stock price accuracy.

1. All Information is Revealed Eventually

One could easily imagine a model where all information, good as well as bad, is eventually revealed even if disclosure is not mandated. In such a model, managers might be able to hide information for a while, but eventually investors will learn the true state of affairs. If a customer cancels a large order,

26. John C. Coffee, Jr., *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 VA. L. REV. 717, 735-36 (1984).

27. George J. Benston, *Required Disclosure and the Stock Market: An Evaluation of the Securities Exchange Act of 1934*, 63 AM. ECON. REV. 132, 149 (1973).

28. *See* Ferrell, *supra* note 7.

say, management might be able to hide the bad news for a while, but eventually investors will learn of the effect of the cancellation on the company's profitability, even if only through a bankruptcy filing.

The imposition of mandated disclosure in such a model might result in the possible release of information at a date earlier than would have otherwise occurred (and, hence, improve stock price accuracy). Any piece of information will eventually be revealed and, at that point, will affect the stock price.

One potentially useful implication of such a model is that mandated disclosure, after the initial adjustment period is over, will produce fewer "stock blow-ups," i.e., stocks with very large negative abnormal returns in a single month. Without disclosure, management may conceal deteriorating company conditions, surprising investors with dramatically bad news. Disclosure suggests that such negative information about a company will be released more gradually over time. I found that there were in fact fewer "stock blow-ups" in the OTC market after mandated disclosure was imposed.[29] Conversely, during the period immediately following the imposition of mandated disclosure (the adjustment period) there might, in fact, be more "stock blow-ups" given the sudden forced revelation of bad news that managers had been able to conceal until that point.[30]

2. Mean Reversion in Fundamental Value

Some scholars have suggested that the firm-specific component of fundamental firm value is mean reverting.[31] If there is mean-reversion, then it is possible that firm-specific information will eventually become, over time, stale and uninformative. This would imply that mandated disclosure could *increase* variance above what it would otherwise be as well as increase stock price accuracy. Mandated disclosure might ensure that information is released while it is still timely, and, hence, have an impact on stock prices. In the absence of mandated disclosure, that information might not have been released until it was stale and uninformative, and hence have no impact on stock prices. While there is no current evidence that such mean reversion does or does not take place, the topic is an active area of research.

3. Constant Discount Rates

Academics have also done rigorous theoretical work on the effects of adding a constant discount rate to a model where all information is revealed eventually. Such research takes into account the fact that the future cash-

29. *Id.*

30. *See* Fox, *supra* note 19.

31. *See* Art Durnev et al., *Value Enhancing Capital Budgeting and Firm Specific Stock Return Variation*, 59 J. FIN. 65, 95 (2004).

flows/profits of a firm are discounted by market participants into current dollars. Models by West[32] and LeRoy and Porter[33] indicate that the release of information on a more timely basis would, in fact, reduce stock return volatility in a world where all information is eventually released. More timely information about future cash-flows/profits of the company will have less of an impact on return volatility than would information released at a later point in time, as the cash-flows/profits are more heavily discounted earlier in time. Interestingly, these models also indicate that while more timely information reduces *return* volatility, it actually increases the volatility of the stock *price* level. These interesting predictions underscore the need to formalize intuitions concerning the impact of mandated disclosure on stock returns and prices under different assumptions.

4. Noise Associated with Information

Alternatively, one could also have a model that would lead one to associate *increased* variance with improved stock price accuracy. This could occur in a model in which there is a noise trader reaction associated with the release of information.[34] In other words, the stock price reaction to the release of information would have two components: a reevaluation of the company's prospects in light of new information and the price impact of noise traders. Depending on how the noise component is modeled, it is possible to have a situation in which increased variance of stock prices is associated with an increase in stock price accuracy. Of course, improved stock price accuracy would result only if the price impact of noise traders was not too large relative to the price impact of the new information.

C. Cross-Sectional Variance

In her study of the effect of the Securities Act of 1933 on stock price behavior, Carol Simon used the cross-sectional variance of abnormal returns as a proxy for stock price accuracy.[35] For each stock in the pre-mandated disclosure period (pre-1933), she calculated the abnormal return for a given period of time, again controlling for market, industry, and time effects. She then calculated the variance of the abnormal returns for stocks in the pre- and post-mandated disclosure period for four groups: seasoned NYSE-listed firms; unseasoned NYSE firms; seasoned non-NYSE firms; and unseasoned non-

32. *See* Kenneth D. West, *Dividend Innovations and Stock Price Volatility*, 56 ECONOMETRICA 37 (1988).

33. Stephen F. LeRoy & Richard D. Porter, *The Present-Value Relation: Tests Based on Implied Variance Bounds*, 49 ECONOMETRICA 555 (1981).

34. *See* Fox, *supra* note 19.

35. *See* Carol J. Simon, *The Effect of the 1933 Securities Act on Investor Information and the Performance of New Issues*, 79 AM. ECON. REV. 295 (1989).

NYSE-listed firms. By comparing the variance of the abnormal returns for these four groups pre- and post-mandated disclosure, Simon found that the variance of abnormal returns was smaller in the post-mandated disclosure period for unseasoned non-NYSE-listed firms.

Simon gives the following intuitive justification for using the variance of abnormal returns as a proxy for stock price accuracy: "The availability of quality information will . . . affect the riskiness of [stocks]. As such, the effects of legislation aimed at increasing investor information should be reflected in changes in the dispersion of market-adjusted returns."[36] This justification is, at best, incomplete, as it fails to connect the cross-sectional variance of returns with an explanation of how increased information at an earlier period of time interacts with the dispersion of abnormal returns. As before, the nature of this interaction will depend on one's assumptions concerning discount rates, when information is revealed if disclosure is not mandated, and, possibly, the actions of noise traders.

While the theoretical connection between the cross-sectional variance of abnormal returns and stock price accuracy is undeveloped, Simon's results are consistent with the view that there is such a connection. She found that the seasoned NYSE firms had the lowest cross-sectional variance of abnormal returns, followed by unseasoned NYSE firms, then seasoned non-NYSE firms and, finally, unseasoned non-NYSE firms. Unseasoned firms had the largest variance of abnormal returns of all four groups.[37] The fact that seasoned NYSE-listed firms had the smallest variance while unseasoned non-NYSE firms had the largest is consistent with using cross-sectional variance as a proxy for stock price accuracy. On a similar note, I found that the cross-sectional variance of abnormal returns in the OTC market pre-mandated disclosure (1962-1965) was significantly larger than the cross-sectional variance of abnormal returns in the listed market for the same time period.[38]

IV. THE LACK OF SATISFACTORY CONTROLS

A second shortcoming of the empirical literature is its general lack of control groups that would allow analysis to take into account changes in market conditions over time. Such a lack of adequate controls is a serious problem with all three of the "classic" econometric studies.

A. Stigler Study

Stigler's controls for changing market fluctuations are unconvincing. First,

36. *Id.* at 295.
37. *Id.* at 309.
38. *See* Ferrell, *supra* note 7.

he simply divided the new-issues portfolio value by a market index value. He does not control for other factors, besides the market index, that might change over time. Moreover, his post-mandated disclosure sample is from the 1950s, some twenty years after the passage of the Securities Act of 1933. Both of these facts call into serious question his findings given the well-documented fact that stock returns and volatility vary significantly over time.

B. Benston Study

As noted before, Benston found a reduction in stock-price variance in the Security Act of 1933's post-mandated disclosure period. Did the Securities Acts cause this reduction as defenders of mandated disclosure contend or did it result from the impact of the Great Depression and other changes in the markets over time? This is an extraordinarily difficult question to answer.

Conceivably, the effects of the Great Depression and the Securities Acts could be disentangled if a good control group were available. Benston's group of companies that apparently disclosed sales information voluntarily before disclosure was mandated would arguably serve this function. The problems with using this group as a control, however, are serious. First, several commentators have noted that many firms in the non-disclosing group did, in fact, disclose basic financial information such as net income and balance sheet data.[39] This throws into question whether the disclosing group can serve as a good control group if it was not all that different from the non-disclosing group.

Second, commentators have argued that the important change wrought by the Securities Acts was primarily in the liability imposed for fraud and non-disclosure, given the arguably poor quality of voluntary disclosures.[40] The SEC found, for instance, that prior to the imposition of mandated disclosure on the OTC market, there was a high level of fraud in the reports that were voluntarily issued.[41] The increased exposure to liability for inadequate disclosure would have affected both groups of companies. Both these criticisms raise the question of whether measuring the *differential* effect that the disclosure requirements of the Securities Acts had on Benston's two groups is a good measure of the Acts' *overall* effect on the capital markets. If the two groups Benston uses are not all that different, then the differential effect of the Securities Acts on these two groups would not serve as a good measure of the Acts' overall effect.

39. *See, e.g.* Merritt B. Fox, *Retaining Mandatory Securities Disclosure: Why Issuer Choice Is Not Investor Empowerment*, 85 VA. L.REV. 1335, 1373-79 (1999).

40. *Id.*

41. Report of Special Study of Securities Markets, H.R. DOC. NO. 88-95, pt. 1, at 151 (1963).

C. Simon Study

Simon's study used a different econometric technique than that of Benston's study to accomplish the goal of isolating the effects of mandated disclosure. Rather than using a control group, as Benston does, she tried to estimate econometrically the effect of "bull" and "bear" markets on the proxies for stock price accuracy—most importantly, the cross-sectional variance of abnormal returns—she employed. Simon measured how the cross-sectional variance of abnormal returns varied over three stock market cycles in the 1946-1960 period.

Isolating the effects of the Great Depression is as fundamentally important to Simon's analysis as it is to Benston's. The obvious need to account for the effects of the Great Depression are confirmed in her finding that the stock market as a whole experienced a substantial reduction in variance during the Great Depression.[42]

However, there are several problems with Simon's control approach, although it is certainly an improvement over ignoring the issue. First, the time period looked at, 1946-1960, is some fifteen to twenty years after the passage of the Securities Act, rendering it less useful as a control group than one tracked in the immediate aftermath of the Securities Act of 1933. Second, it is unclear whether the behavior of the variance of abnormal returns in the bear market of 1957-1958, for example, will tell us much concerning the impact of the Great Depression on variance. These two events were of entirely different orders of magnitude and duration.

In the end, prudentially, Simon concludes that, "[t]he coincident timing of [the Great Depression and the Securities Acts] makes it difficult to fully disentangle competing hypotheses."[43]

D. Ferrell Study

In terms of controls, there are some clear advantages in studying the 1964 extension of mandated disclosure to the OTC market. First, throughout the time period examined (1962-1968) there was no stock market event anywhere on the order of the Great Depression. Second, there exists a natural control group. Exchange-listed companies throughout this time period had already been subject to mandated disclosure requirements for some thirty years. It was the OTC market that was affected by the change in the coverage of mandated disclosure requirements.

In the course of measuring volatility, cross-sectional variance, average stock returns, and stock return synchronicity, I analyzed both the listed market

42. *See* Simon, *supra* note 35, at 309.
43. *Id.* at 311.

and the OTC market. One can therefore control for changing market conditions over time by using difference-in-difference estimators.

V. CONCLUSION

Two of the main potential advantages of mandatory disclosure are more informed stock prices and better corporate governance. A crucial step in identifying the effects of mandatory disclosure is theoretical and empirical work that can enable empirical researchers to confidentially use proxies for increases in the informational content of stock prices and improved corporate governance in studying changes in mandatory disclosure regulation. Recent research on mandatory disclosure has started to fill in this gap.